



National Aeronautics and  
Space Administration

**John C. Stennis Space Center**  
Stennis Space Center, MS 39529-6000

**SPR 8715.2 Rev H**  
**May 2016**

## **COMPLIANCE IS MANDATORY**

### **John C. Stennis Space Center Operational Readiness Program Procedural Requirements**

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## Document History Log

Status/Change/ Revision	Change Date	Originator/ Phone	Description
SPG 8715.2 Basic	10/27/2000	Clifton Arnold /x81685	Initial release. Note: The original history of the prior Directive has been retained here to provide clarity and for tracking and reference purposes.
SPR 8715.2 Basic	10/29/2004	Renay Nelson /x81585	Revalidated and corrected per NASA Rules Review/Revised document number.
SPR 8715.2 B-1	2/01/2006	Clifton Arnold /x81685	Administrative correction to correct expiration date which was posted in error.
Rev C	2/28/2010	Robert Gargiulo /x83842	Rewrite per SPR directives requirements.
Rev D	8/02/2010	Robert Gargiulo /x83842	Removed assessment of construction (para 5.1 c) and added regulatory agency licenses/permits
Rev E	2/28/2011	Robert Gargiulo /x83842	Administrative changes and clarification on where data reports will be filed; added Technical Review Process Team concept; updated Appendices.
Rev F	5/20/2013	Tiffany Hawkins /x81175	Updated verbiage to reflect SMA change from Office to Directorate; updated signature requirements in section 6.2; updated Appendix B sample letter
Rev G	2/10/2015	Robert Gargiulo /x83842	Clarified ORA team and ORAB authority to release existing, new and modified systems/operations and to authorize the commencement of activation and testing; introduced Category A and B systems/operations based upon risk potential; added the use of RFIs to collect data; updated the notional ORI timeline; changed the name of the ORA chairperson to ORA "Lead" to remove confusion with the ORAB Chairperson; changed the name of the ORIC to ORI and Safety Review Team (SRT) to Operational Readiness Team (ORT) to more accurately reflect the scope of the review; defined the subset of the ORAB for ORTs and IIs as a "mini-ORAB." Created a Figure Table.

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			Updated Figure 1.0 to reflect the changes to the document. Added Figure 2.0 to overview the authority to release systems/operations. Provided inputs related to air/ground/marine range operations. Added Appendices B-F to provide sample letters and Appendix G to provide a list of organizations who would provide personnel to support ORAs. Administrative corrections.
Rev H	5/11/2016	Robert Gargiulo /x83842	Revised Appendix B to clarify the time commitment for ORA team members. Removed Flight Readiness Review from both Appendix B and Chapter 5 Mission Readiness Review (MRR) is the more appropriate term. Updated grammar and formatting.

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## **PREFACE**

### **P1. PURPOSE**

This Stennis Procedural Requirement (SPR) establishes procedures and guidelines for conducting an Operational Readiness Assessment (ORA) at the National Aeronautics and Space Administration (NASA), John C. Stennis Space Center (SSC). An ORA is conducted by one of the following teams/individuals: Operational Readiness Inspection (ORI), Operational Readiness Team (ORT), or Independent Investigation (II) of facilities, test operations or equipment including Special Test Equipment (STE) or air, ground and/or marine range operations. ORAs are conducted in accordance with Stennis Policy Directive (SPD) 8715.1, *John C. Stennis Space Center Operational Readiness Program*.

The primary function of an ORA is to provide, on behalf of the Center Director, an independent assessment of the readiness of the personnel, processes/procedures, facilities and/or equipment to safely execute SSC's mission in support of tests, range operations or facility activations. The ORA assures the preservation of SSC's personnel, facilities, mission and the environment. The ORA assures due diligence is exercised in our engineering, operations, and mission assurance processes and procedures in support of SSC and NASA's mission.

### **P2. APPLICIBILITY**

- a. This SPR is applicable to NASA personnel in all SSC Directorates and Mission Support Offices.
- b. This SPR is applicable to contractors to the extent specified in their respective contracts.
- c. This SPR is applicable to operational readiness activities associated with new construction or modification of existing facilities and operations and equipment in support of programs operating at SSC. It includes industrial and test operation support facilities; as well as air, ground and/or marine operations on SSC's ranges.

### **P3. AUTHORITY**

- a. NASA Technical Standard (STD)-8719.7, *Facility System Safety Guidebook*
- b. NASA Procedural Requirements (NPR) 8715.3, *NASA General Safety Program Requirements*
- c. SPD 8715.1, *SSC Operational Readiness Program*

### **P4. APPLICABLE DOCUMENTS**

- a. NPR 7900.3, *Aircraft Operations Management Manual*
- b. NPR 8000.4, *Risk Management Procedural Requirements*

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- c. NPR 8715.5, *Range Flight Safety Program*
- d. NPR 8820.2, *Facility Project Requirements*
- e. Stennis Common Work Instruction (SCWI)-8710-0001, *SSC System Safety and Health*
- f. SCWI-8080-0001, *SSC Propulsion Test Project Management*
- g. SPD 7120.1, *SSC Institutional Risk Management*
- h. Stennis Safety Procedure (SSP)-8715-0001, *SSC Safety and Health Handbook*
- i. SPR 8715.1, *SSC Safety and Health Program Requirements*
- j. SPR 8715.7, *SSC Range Safety Program*
- k. SPR 7120.1, *SSC Risk Management Procedural Requirements*

#### **P5. MEASUREMENT/VERIFICATION**

Compliance with requirements cited in this document will be measured through successful presentation and documentation of the ORA; as well as the data and decisions presented in support of test readiness reviews, facility activation reviews, and flight safety reviews. The data, reports, and presentations shall be filed in Central Engineering Files (CEF) and a copy shall be filed in the applicable Design & Data Management System (DDMS) test and/or facility design project directory as warranted.

#### **P6. CANCELLATION**

SPR 8715.2 G, dated February 2015.



Richard J. Gilbrech, Ph.D.  
Director

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## **CHAPTER 1. ORGANIZATION RESPONSIBILITY**

### **1.1 Director, Safety and Mission Assurance Directorate**

The Safety and Mission Assurance Directorate (SMA) Director shall:

- a. Determine the level of review to be conducted on the facilities, equipment, operations and/or processes after consulting/coordinating with the associated Directors and Managers of the directorates, offices, programs and/or projects.
- b. Assist associated Directors and Managers of the directorates, offices, programs and/or projects in the identification of facilities, equipment and/or operations requiring an ORA.
- c. Serve on the Operational Readiness Assessment Board (ORAB).
- d. Select an ORA Lead in concert with the appropriate Director(s) and the ORAB Chairperson.
- e. Establish functional membership and consultancies in coordination with the ORA Lead.
- f. Prepare a NASA notice for the approving authority's signature, accompanied by rationale for and recommendation of any ORA Lead or members without a vested interest in the facility or operation under review.
- g. Provide a safety and quality assurance representative for each ORI and ORT.
- h. Review findings of all ORA team's subsystem activations with the appropriate operating director, authorize continuance of operations or direct appropriate action to disposition outstanding issues.

### **1.2 Directors/Managers of Directorates/Offices/Programs/Projects**

Directors/Managers of the directorates, offices, programs and/or projects shall:

- a. Identify existing or proposed hazardous or programmatically important equipment, facilities or operations requiring an ORA.
- b. Identify facilities, equipment or operations requiring an ORA in a timely fashion, so the assessment can be conducted consistent with scheduled milestones, use or operation, and the ORA can be properly budgeted/funded.
- c. Make recommendations on the level of review to be conducted on the facilities, equipment, operations and/or processes.
- d. Recommend to the SMA Director, a lead, members, recorders (recorders should be provided by the organization responsible for the facility/equipment/operation or process under review) and consultants; identify to the SMA Director any of the above individuals with a vested interest in the assessment.
- e. Serve as Point of Contact (POC) for the ORA team during the inspection, or designate an individual to serve in his/her place.



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- f. Implement ORA team recommendations or provide a valid rationale when recommendations cannot or should not be followed.
- g. Assure requirements for analysis and supporting documentation/information are included in facilities or operations planning, so data is available to support ORA team needs in a timely manner.
- h. Provide the ORA Lead a periodic status of the action(s) being taken on recommendations.
- i. Assure appropriate analyses are accomplished when facility, procedures and equipment modifications are made; report changes or modifications creating new hazards to SMA.
- j. Work with the ORA team to provide facility or operational requirements, documentation to satisfy the general requirements of this SPR, and a schedule for submittal of the documentation.
- k. Provide for implementation of this SPR in all efforts.
- l. Review all ORA findings with the applicable operating Director and authorize continuance of operations or direct appropriate action to disposition outstanding issues.

### **1.3 SSC Organizational Elements or Employees**

SSC organizational elements or employees shall:

- a. Provide all necessary information or assistance requested by the ORA teams.
- b. Participate on ORA teams as requested.

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ORGANIZATION/PARTY	Identify Facilities/Systems for Review	Determine ORA Review Level	Nominate ORA Lead	Select ORA Lead	Nominate ORA Personnel	Provide Consultants & Recorder	Select ORA Team	Prepare ORA Team Assignment Letter	Establish ORA Team	Develop ORA Milestones	Assure Completion of Applicable Analyses	Update FRI Index (if applicable)	Implement ORA Recommendations	Provide ORA Non-Closure Rationale	Review ORA Team Findings	Authorize Activity "To Proceed"	Release ORA Team	Assess ORA Policies & Procedures
SMA Directorate		X		X	X		X	X		X	X	X			X			X
Engineering & Test Directorate	X	X	X	X	X	X	X			X	X				X			
Center Operations Directorate		X	X		X					X	X				X			
ORA Lead					X					X								
ORA Board/Mini ORAB										X					X			
Center Director									X							X	X	

Figure 1.0 Organizational Responsibilities

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## **CHAPTER 2. OPERATIONAL READINESS ASSESSMENT REVIEW CRITERIA**

ORAs are performed through an ORI, an ORT and/or an II. The decision to use an ORI, ORT or II is based upon the complexity, scope and inherent risks of the project, test, operation or facility.

- a. ORI: An ORI is conducted for new major construction and/or reactivation of facilities or operations/tests with significant potential increase in operational risk. Example: Facility upgrade of solid propellant test facility to process liquid propellants.
- b. ORT: An ORT is conducted for new construction and/or reactivation of facilities or operations with potential moderate risk or modification of facilities or operations resulting in major facility risk index change. An ORT may be conducted for marine, ground or air operations on the SSC ranges depending on the complexity or inherent risk to personnel, facilities or SSC mission. Examples: (1) High pressure Liquid Oxygen (LOX) and rocket propellant tests add ultra-high pressure hydrogen capability (Facility Risk Indicator (FRI) 1C changes to FRI 1A). (2) Test of unproven vehicles with limited or no flight history and unknown risk assessment.
- c. II: An II is conducted for modifications to facilities not resulting in a facility risk index changes. These would include facility changes within established facility capabilities. For marine, ground, or air operations on the SSC ranges, an II may be necessary for changes to routine range operations. Examples: (1) Minor programmatic Special Test Equipment (STE) changes that do not exceed facility capabilities; (2) Flight of a proven vehicle with flight history and limited unknowns.

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## **CHAPTER 3. OPERATIONAL READINESS ASSESSMENT MEMBERSHIP**

### **3.1 Operational Readiness Assessment Board**

Via delegated authority from the Center Director, the ORAB is established and provides guidance to an ORA team and advises the Center Director on the outcome and recommendations of the ORA. The ORAB shall:

- Perform status reviews and evaluations of the assessment team activities and provide recommendations for additional activities determined necessary.
- Specify the degree of approval authority granted to the assessment team(s) for activation and milestone events.
- Conduct a final review to evaluate and assure adequacy of the ORA effort, including appropriate documentation.
- Report the readiness of the facility/operation to the Center Director; provide supporting data for imposed restrictions and limitations; and recommend authority to proceed.

### **3.2 Operational Readiness Assessment Board Membership**

The ORAB full membership shall consist of the following members:

Chairperson: Center Deputy Director

Members: Director, Safety and Mission Assurance Directorate\*  
Director, Center Operations Directorate  
Director, Engineering and Test Directorate

Adjunct/Advisory Members (as directed by the ORAB Chairperson):

Director, Rocket Propulsion Test Program Office  
General Manager, Applicable Contract(s)  
Subject Matter Expert, based upon mission/operation/test

\*Alternate Chairperson

For ORTs and IIs, the ORAB may consist of a subset of the membership listed above depending on the complexity of the ORA or the facility/operation. This subset of the ORAB will be called a mini-ORAB. The SMA Director shall determine the composition of the mini-ORAB.

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### 3.3 Operational Readiness Assessment Team Responsibilities

The ORA team for an ORI, ORT, or II shall:

- a. Confer with the ORAB/mini-ORAB and the applicable projects/operations office to establish the assessment areas and focus of the ORA. The letter establishing the ORA team provides specific guidance for the ORA team.
- b. Review and inspect the assigned equipment, facilities or operations, associated operating procedures, and readiness of personnel.
- c. Assess the risk and hazards associated with all aspects of the activity.
- d. Inspect and recommend changes or controls (as necessary) to assure operational readiness of the equipment, operations, process/procedures and/or facility. Chapter 6 of this SPR provides guidance on the type of systems, data, analyses and procedures the ORA team shall review. The ORA team's review of systems, data, analyses and procedures is not to assess the design for optimization or to perform the design efforts, assessments and/or analyses again.
- e. Keep the ORAB/mini-ORAB and the management of the organizational element informed of progress.
- f. Ensure discrepancies are documented using SSC Form 649, Review Item Discrepancy (RID) (see Appendix F). RIDs are generated to identify discrepancies or disconnects in operational readiness or to request information that is not readily available to the ORA team.
- g. Ensure all RIDs are either closed out or elevated for resolution to the ORAB/mini-ORAB.
- h. Present and submit ORA findings, recommendations and conclusions to the ORAB/mini-ORAB.
- i. Under the authority delegated by the ORAB and the guidelines within this SPR, release or approve systems for activation, test and/or range operations. The delegated authority is based upon the complexity of the facility and/or system and on the guidance for the risk potential category (Category A, Category B or Non-hazardous). See Chapter 4 for guidelines on the risk potential categories and the delegated authority to release or authorize systems, operations and facilities for activation and test.
- j. For facilities, systems and/or operations in which the authority to proceed (into activation, into test, or into range operations) resides at the ORAB or the Center Director level, the ORA team shall prepare a letter of recommendation for the ORAB and/or Center Director signature/approval. The letter shall be consistent with the findings, recommendations and conclusions presented to the ORAB/mini-ORAB.
- k. Prepare and submit a final summary report as required by this document.
- l. Submit all files, records and final summary report to the CEF and the project/program or facility files within the Design and Data Management System (DDMS) for retention.

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### 3.4 Operational Readiness Assessment Team Composition

The ORA team for ORIs, ORTs, and IIs shall consist of the following personnel.

- a. The ORI team consists of a lead, a recorder, and a minimum of three (3) other members.
- b. The ORT team consists of a lead and two (2) to three (3) additional members. Additional consultants may be added as necessary.
- c. A representative from the SMA Directorate shall serve as a consultant to the ORI and ORT to assure a complete and thorough review.
- d. An II is accomplished by a single individual; however, more than one (1) individual may be assigned. The SMA Director may assign individuals to an II on an ad hoc basis. Requests made by other offices to have an II performed shall be brought to the SMA Director, who shall sanction such reviews. The specific areas of review or focus for an II are defined by the SMA Director in concert with the appropriate operating Director.

### 3.5 Technical Issue Support

If the ORA team identifies a specific technical issue that is beyond the resident expertise or capabilities of SSC, additional technical support can potentially be obtained through a Technical Review Process Team (TRPT), the NASA Engineering and Safety Center (NESC) or the NASA Safety Center (NSC). The TRPT, NESC or NSC support would report their findings, recommendations and conclusions to the ORA team.

- a. TRPT: A TRPT can be formed to investigate and make recommendations to resolve the technical issue. A TRPT is an independent technical review that supports the ORA process. TRPTs are comprised of technically competent experts for the area of concern. Individuals assigned to a TRPT are chosen by the Directors/Managers who have cognizance over the projects/facilities/processes under review. TRPTs may include contractors, representatives from other NASA centers and/or representatives from the public sector.
- b. NESC: NESC's mission is to perform value-added independent testing, analysis and assessments of NASA's high-risk projects to ensure safety and mission success.
- c. NSC: NSC's mission is to provide SMA expertise, information, verification and analysis to enable collaboration and learning while promoting a safe workplace and successful programs and projects.

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## **CHAPTER 4. AUTHORITY TO RELEASE SYSTEMS, OPERATIONS, & FACILITIES**

ORAs are performed on behalf of the Center Director to assess the operational readiness of an industrial/test support facility for activation, a test stand and its associated systems for activation or test in support of a test project/program, or to proceed into marine, ground and/or air range operations. The Center Director can delegate the authority to release systems, operations and/or facilities for activation or for testing to the ORAB or down to the ORA Lead. The level of delegation is based upon the complexity, the risk potential and mission/political significance of the facility and/or test program/project, or the air/marine/ground range operation.

### **4.1 Risk Potential Categories**

There are three (3) risk potential categories for systems and operations: Category A (high risk potential), Category B (low risk potential) and non-hazardous systems/operations.

#### **4.1.1 Category A High Risk Potential**

Category A systems/operations include systems/commodities and operations with higher risk potential due to the inherent hazards of the materials, processes and/or operations. Category A includes the following types of systems and operations (not an all-inclusive list):

- a. Propellants/Oxidizers (LH/GH, IPA, CH<sub>4</sub>, RP-1, JP-8, LOX/GOX, H<sub>2</sub>O<sub>2</sub>, etc.).
- b. Pyrophoric/hypergolic/pyrotechnic operations/systems.
- c. Ultra-high pressures systems (greater 10,000 psi).
- d. Vacuum systems with the potential to cause bodily harm or facility damage, (e.g. A-3 test cell).
- e. Complex Hydraulic Systems (e.g. A-3 door and isolation valve).
- f. Marine, Ground and Air Range operations with unproven vehicles with limited or no history and unknown risk assessment.
- g. Flight termination systems for air range operations/flight systems (e.g. explosive termination).
- h. Short Range Training Ammunition (SRTA).
- i. Category B operations/systems/commodities which present unique hazards (asphyxiation, confined spaces, etc.).

#### **4.1.2 Category B Low Risk Potential**

Category B systems/operations includes systems/commodities and operations with low risk potential due to the inert commodities and non-hazardous materials; however, the systems and operations require assessment of the design, procedures, operations, etc. NOTE: A Category B

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system/operation can be elevated to a Category A if it presents a unique operational hazard. Category B includes the following type of systems and operations (not an all-inclusive list):

- a. Systems/operations utilizing inert commodities, such as air, LN/GN, GHe, and water.
- b. Fire Protection Systems such as sprinklers, Fire Extinguishing System (FIREX)/Deluge, etc.
- c. Marine, Ground and Air Range operations with proven vehicles with operational history and documented risk assessment (operations with minimal risk to facilities or personnel).

#### 4.1.3 Non-Hazardous Systems and Operations.

Non-hazardous systems/operations typically support activation and test operations with Category A and B systems/operations. Non-hazardous systems and operations include the following systems (not an all-inclusive list):

- a. Video and infrared cameras.
- b. Fire and Gas Detection Systems.
- c. Purges to electrical panels and cameras.
- d. Monitoring equipment.
- e. Signal Conditioning Buildings (SCB) and their associated equipment.
- f. Alarm and warning systems, etc.

## 4.2 Authority to Release Systems/Operations

Systems and operations can be released for preliminary test/activation or range operation commencement once the applicable RIDs for a system and/or operation have been closed or properly addressed, the ORA team has completed the associated readiness assessment and the test team or the range operations team is ready. For test programs, the release of systems and operations typically aligns with cold flows/shock with inert commodities on new/modified systems in support of the Activation Test Readiness Review (ATRR) milestone. These activities are generally the precursors to test facility activation with the planned propellants and oxidizers. For marine, ground and/or air range operations, systems/monitoring/test equipment/programs may be released for preliminary testing and operational checks in preparation for full range operations. The level of authority to release systems and operations shall follow the guidance below and in Figure 2.0 unless specifically directed otherwise by the ORA Letter of Appointment. The ORAB may also change the level of authority throughout the ORA process.

- a. The ORA Lead may release non-hazardous systems/operations which support activation/operation once all associated/applicable RIDs have been satisfactorily addressed or closed. Documentation of the release shall be noted in the ORA minutes or records.
- b. Activation/operation of Category B systems requires an ORA review to ensure operations are consistent with nominal or heritage activities. The ORA Lead may release Category B



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systems in support of preliminary tests/activation/operation once all associated/applicable RIDs have been satisfactorily addressed or closed. Release shall be by formal letter.

- c. Activation/operation of existing Category A systems requires an ORA review to ensure operations are consistent with nominal or heritage activities. The ORA Lead may release existing Category A systems in support of preliminary tests/activation/operation once all associated/applicable RIDs have been satisfactorily addressed or closed. Release shall be by formal letter.
- d. Activation/operations of new/modified Category A systems require ORA review and ORAB authority/approval to proceed in support of preliminary tests/activation/operation once all associated/applicable RIDs have been satisfactorily addressed or closed. Release shall be by formal letter.

NOTE: A system/operation is considered to be existing (not modified) as long as the operations are consistent with nominal or heritage activities and are within the existing system design/operational parameters. Changes and repairs that do not affect the form/fit/function are not considered system/operation "modifications." The addition or removal of measurement and monitoring equipment is not considered "modification" unless it affects the operational performance (e.g. an in-line flow meter may affect performance).

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Systems Release / Preliminary Activation		Activation		Test / Range Operations	
Purpose	Approval	Purpose	Approval	Purpose	Approval
Propulsion Test Leak checks, initial ops checks to time/tune valves, flow rates, test igniters, cold flow/shock w/inerts etc Data supports ATRR decision	Cat A/Cat B: ORA review/ release pending no open RIDS	Activation with actual commodity Data supports TRR decision*	Cat A: ORA review, ORAB approval  Cat B: ORA review & approval	Full hot fire test with propellants*	Cat A/Cat B: ORA review; ORAB approval
Industrial or Operational Facility Leak checks, initial ops checks to time/tune valves, flow rates, etc. Data for facility Activation decision	Cat A: ORA review, ORAB release  Cat B: ORA review/release	Full Activation of an Industrial or Test Operations Support Facility	Cat A/Cat B: ORA review, ORAB approval		
Range Operations Monitoring/test equip/programs for prelim testing and op checks to prep for full range ops	Cat A/Cat B: ORA review/ approval			Full air, ground, and/or marine range operations**	Cat A/Cat B: ORA review; ORAB or Range Management Panel approval

\* Propulsion test: ORAB approval and Test Readiness Certification (SSC Form 718)

\*\* Range Operations: ORAB/RMP approval plus related air worthiness, FAA, and Flight Readiness Review approvals

Figure 2.0 Authority to Release Systems/Operations

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#### 4.2.1 Release of Category A Systems/Operations

- a. The ORA team shall brief the ORAB/mini-ORAB with recommendations to release systems for operations/activation.
- b. Release of new/modified Category A systems is a formal responsibility of the ORAB and is accomplished by a written letter signed by the ORAB Chairperson.

NOTE: The ORAB/mini-ORAB may delegate in writing the authority/approval to release a Category A system/operation to the ORI, ORT or II Lead.

#### 4.2.2 Release of Category B Systems/Operations

- a. Existing Category B systems/operations which are used consistent with nominal or heritage activities are available for use as long as there are no outstanding RIDs.
- b. The ORA team can release new/modified Category B systems once the systems have been assessed by the team. This is accomplished through an ORI, ORT or II Lead letter or memorandum.

#### 4.2.3 Non-Hazardous Systems/Operations

Non-hazardous systems/operations support activation and test operations with Category A and B systems/operations. The ORA team permits the projects to use these non-hazardous systems/operations as long as there are no outstanding RIDs on these systems.

### 4.3 Authorization to Commence Propulsion Test Project Activation and Test

Authority to commence activation with the Category A commodities/systems (typically after cold flows/shock with inert commodities) and to commence the test program/project testing shall adhere to the following guidance unless specifically directed otherwise by the ORA Letter of Appointment. The ORAB or the Center Director may change the level of authority at any time. The ORA team shall brief the ORAB/mini-ORAB in preparation for test stand/facility activation and test. The ORA team makes a recommendation to the ORAB on whether to proceed into activation prior to/in support of ATRR and whether to proceed into testing prior to/in support of TRR. The recommendation to the ORAB includes any recommended controls/conditions. The ORA team also provides a briefing at the ATRR and the TRR which reflects the decisions and outcomes of the briefing to the ORAB.

#### 4.3.1 Activation

A letter granting authority to proceed into propulsion test stand/facility/equipment activation is signed by the ORAB Chairperson on behalf of the Center Director.

- a. The letter is prepared with the ORA Lead's recommendation and signed/approved by the ORAB Chairperson.

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- b. Activation may commence once the independent ORA assessment and the technical review are complete, and the following documents are signed:

- (1) Independent assessment: ORAB letter granting authority to proceed.
- (2) Technical Review: ATRR "Test Readiness Certification," SSC Form 718.

#### 4.3.2 Test

A letter granting authority to proceed into propulsion test program/series is signed by the Center Director or the ORAB Chairperson on behalf of the Center Director.

- a. The letter is prepared for the ORAB Chairperson providing their recommendation and signed/approved by the Center Director.
- b. If approval is delegated to the ORAB Chairperson, then the ORA Lead prepares the recommendation for the ORAB Chairperson's signature/approval.
- c. Propulsion test may commence once the independent ORA and the technical review are complete and the following documents are signed:
  - (1) Independent assessment: SSC Center Director or ORAB letter granting authority to test.
  - (2) Technical Review: TRR "Test Readiness Certification," SSC Form 718.

#### 4.4 Authorization to Commence Facility Activation

For industrial and/or test support facilities/operations, the facility/system can be released for operational use and activation once the applicable RIDs have been closed or properly addressed; the ORA team has completed their readiness assessment; and facility project team is ready. The ORA team makes recommendations to the ORAB on whether or not to activate a facility and any necessary controls/conditions. A letter granting authority to activate the facility is signed by the Center Director or the ORAB Chairman on behalf of the Center Director. The approval to activate an industrial and/or test support facility/operation is typically granted in conjunction with a Facility Readiness Review (FRR).

#### 4.5 Authorization to Commence Marine, Ground and/or Air Range Operations

For marine, ground and/or air range operations, authorization to commence shall be granted by the Range Management Panel or if the potential risk associated with the range operations are significant, by the ORAB. The ORA team makes recommendations to the Range Management Panel or ORAB on whether or not to authorize/proceed into range operations. A letter granting authority to commence range operations shall be signed by the Center Director or the ORAB Chairman on behalf of the Center Director, or the Range Management Panel Chairperson depending upon the range risk management tier level. See SPR 8715.7, *John C. Stennis Space Center Range Safety Program*.

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## **CHAPTER 5. OPERATIONAL READINESS ASSESSMENT EVENT TIMELINE**

The following is a notional timeline reference to the integration between a test project and the ORA process (See Figure 3.0). A similar process would occur when activating a new industrial or test support facility at the completion of construction. The exception would be the incremental activation of major industrial operations or major systems, and a FRR lieu of an ATRR/TRR. For range operations, a similar process is followed with a Mission Readiness Review (MRR).

### **5.1 ORA Team Authorization Letter**

When the test project has completed the design work and construction activities are nearing completion, a letter forming the ORA team is written per SPR 8715.1 (See Appendix B). The Lead, team members, and the scope of the ORA is identified in the SMA prepared letter.

### **5.2 Project Informational Review**

The ORA Lead requests the needed project information and provides it to the review team members. Depending on the complexity of the project, this starts generally two (2) weeks to one (1) month prior to the facility walk-down and the formal test/project readiness review. For very large or complex projects/programs, the ORA Lead coordinates with the appropriate operating Directorate Point Of Contact (POC) to schedule the facility walk-down and formal review.

### **5.3 Facility Walk-down and Formal Readiness Review**

A facility walk-down and formal readiness review (Activation Test Readiness Review ATRR, TRR, or a FRR) is conducted after construction is completed but prior to potentially higher risk facility activation tests. Facility checkouts with inert gases and liquids at low pressures for existing systems/operations are generally not considered high risk, as long as the operations are consistent with nominal or heritage activities and are within the design/operational parameters of the existing system. Completion of these activities provides needed operational readiness information to the ORA team and activation activities. The facility walk-down is generally followed by a formal readiness review in which the project office, operations, safety, and the test article representatives present the configuration, current status, hazard analysis, planned activation, and planned test article testing. The walk-down and formal readiness review generally takes one (1) to two (2) days to complete. A TRPT can be formed to investigate and resolve major technical issues uncovered in ORA or in the normal design, development and/or operational processes. Technical issues may also be addressed through a formal request to NESC or NSC.

For range operations, a similar process is followed, but the formal readiness review is the Flight Readiness Review or the MRR. Depending on the operational risks, the risk acceptance may be approved by the Range Management Panel Chairperson or elevated to an ORAB.

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#### 5.4 ORA Team Review Item Discrepancy

Following the project review and the facility walk-down and all the way up to and including the ATRR/TRR, the ORA team convenes to submit and compile all RIDs. The RIDs concisely describe the problems, the risk if left uncorrected, what is needed to correct the problem (tangible proof), and the deadline for correction (prior to the applicable milestone or event). RIDs shall also be used to request data, information, reports, analyses, and procedures not readily available through the project/program DDMS files. ORA team meeting minutes and memorandums can be used to track data/information used as part of the operational readiness assessment. The ORA Lead oversees the RID compilation to eliminate duplication and to present the summary of the RIDs to the appropriate operating directorate and project office POCs, and to the ORAB/mini-ORAB. It is important to ensure the responsible parties have received the RIDs and are providing timely and complete responses.

#### 5.5 ORA Team Management Presentation and Recommendations

The ORA Lead coordinates with ORAB/mini-ORAB and the project/program management team to present the ORA findings, recommendations, and conclusions necessary in support of releasing systems for activation and for major milestone reviews (ATRR/TRR). This is a formal presentation describing what was reviewed, general observations, noted high-risk areas, and the current status of the RIDs. Not all RIDs are necessarily closed prior to the presentation to the ORAB/mini-ORAB.

#### 5.6 System Activation/Operation Release Process

The ORA Lead drafts a letter or memorandum with the ORA recommendations to release systems for activation and/or the authorization letter to proceed/commence operations (test, facility activation, etc.) for ORAB Chairperson's signature/approval on behalf of the Center Director. The authorization letter is typically contingent upon the closure of all RIDs prior to the specified event. This letter is presented to the ORAB/mini-ORAB for their consideration after the formal presentation. The presentation normally takes approximately one to two (1-2) hours. RIDs are written against a specific system and require closure or resolution prior to a specified event. This allows work to be completed on other systems in meeting schedules while the RIDs are addressed. Prior to the ORAB/mini-ORAB presentation, the ORA Lead should release systems for activation/operation as the RIDs against the system are closed. The ORA Lead coordinates the presentation of findings with ORAB/mini-ORAB and the SSC Management as soon as possible after completing the review. This presentation occurs before test article testing starts and before operation of any system(s) having a higher potential risk. After the presentation of findings and the authorization to proceed into testing has been granted, the ORA Lead carries out any additional ORAB/mini-ORAB provided direction.

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The ORA Lead works closely with the appropriate Directorate POC and project office manager to disseminate notifications of system releases in a timely manner. The ORA Lead makes sure all RIDs are closed prior to completing the ORI/ORT/II Final Report.

#### **5.7 Review Item Discrepancy Closure**

The ORA Lead oversees the review of submittals for RID closure. The RID list status shall be tracked and updated. The ORA Lead provides updates to the appropriate Directorate POC and to the project office manager. The RIDs and the associated approved submittals for closure are formally filed.

After authorization is granted to proceed into testing/operation/activation, the ORA Lead oversees the review of submittals and timely RID closure for the remaining open items. Operations' personnel shall provide timely submittal of RID closure information and make sure the applicable RIDs are closed prior to proceeding into the specified operation.

#### **5.8 Final Report**

After an ORA is complete and the RIDs are dispositioned, the ORA Lead generates a final summary report in accordance with Section 7.2 of this SPR. The ORA Lead ensures all ORA review information, presentations, authorization letters, RIDs, associated closure information, and a copy of the final summary report are filed in the CEF and the DDMS project/program or facility files. Finalizing a report usually takes a few days. Routing the report for signature by the review members and gathering the information for the archives takes the ORA team's secretary several weeks.

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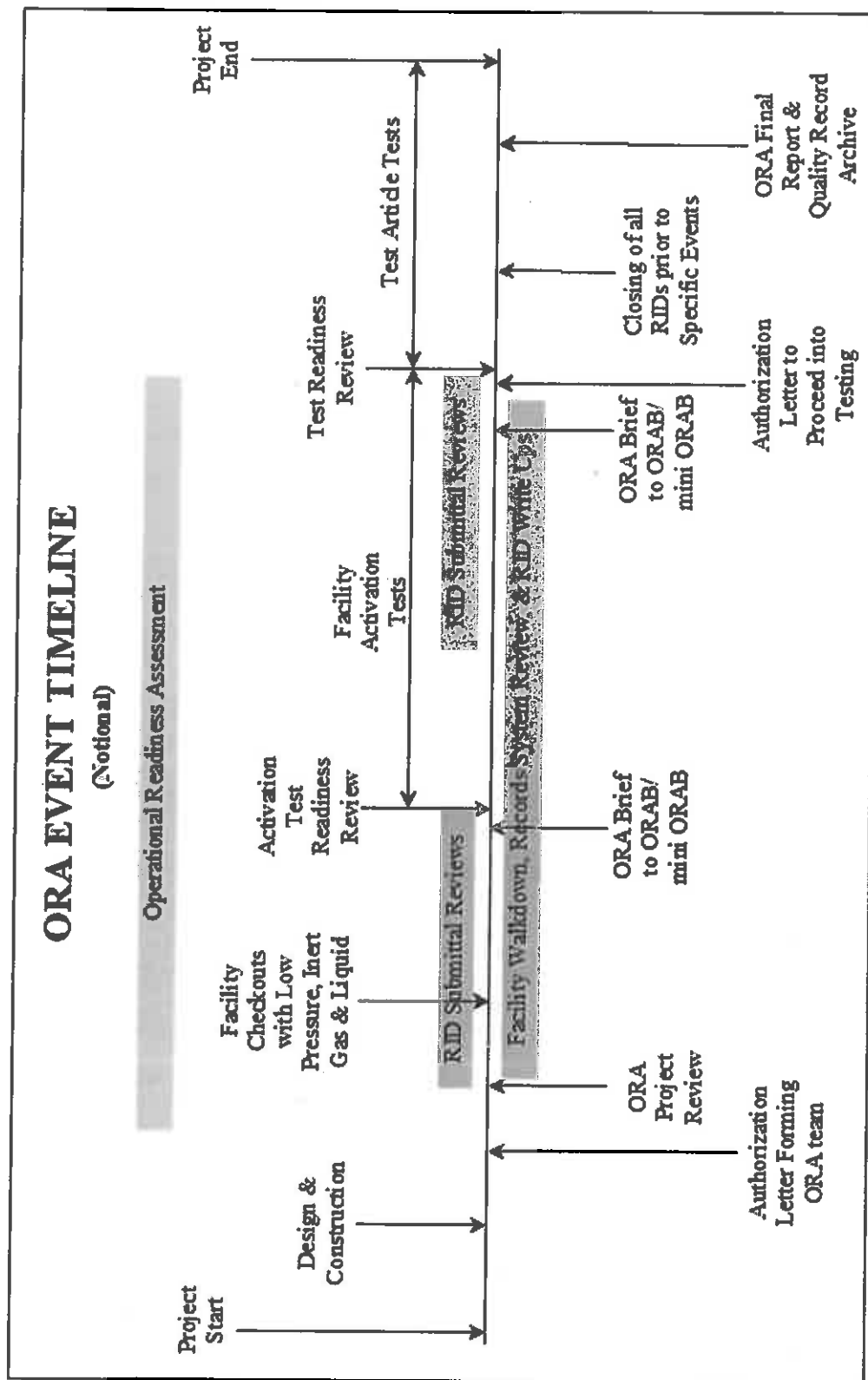


Figure 3.0 Notional ORA Event Timeline



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## CHAPTER 6. REVIEW AREAS

### 6.1 Facilities, Systems, and Tests Operations

The following lists required and recommended review areas for ORA of facilities, systems, and test operations. The ORA team should consider other areas as applicable and necessary.

- a. **Project Requirements:** The ORA team should review the Facility Capabilities Document (FCD), Facility Requirements Document (FRD), Interface Control Document (ICD), Project Requirements Document and/or Systems Requirements Document (SRD) to understand the project/program/test/facility requirements. The requirements documents provide pertinent information such as interfaces between the test article and the facility, operational/performance requirements, mandatory operating conditions for startup and shutdown of systems, etc. The requirements documents are used to scope the ORA.
- b. **Design:** The ORA team should review the following design, interface and data requirements as applicable. The purpose is to verify all the design efforts, assessments, and analyses were accomplished. It is not to assess the design for optimization or to perform the design efforts, assessments and/or analyses again. The ORA Lead shall ensure a record of reviewed data is kept.
  - (1) Material compatibility and cleanliness requirements for instrumentation, components, equipment, and piping systems.
  - (2) Equipment operating ranges and margins to include stress analysis, control functions, thermocouple ranges, pressure sensors, relief devices, and pressure vessels. This includes:
    - Verifying the equipment is properly sized/designed for the operation and calibrated (current).
    - Verifying the design addressed proper sizing of screens/filters, backflow prevention/check valves, break points for varying clean levels, etc.
    - Verifying equipment and components are properly rated for their operating environment, such as explosion proof/intrinsically safe electrical equipment in hazardous classification areas.
    - Verifying instrumentation placement and related operational impacts (laminar vs. turbulent flow, pressure drops, etc.).
    - Verifying proper relief systems (operational scenarios; sizing; supports; bleeds, bypass & drains; high point vents/release for cryogenics, etc.).
  - (3) Data acquisition and controls configuration to highlight single-point failures and system safety interlocks.

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- (4) Approved deviation/waivers on the existing or modified systems/facilities/operations. The ORA team can request deviations/waivers from the Configuration Management Office.
- c. **Regulatory Agency Requirements:** The ORA team should verify the proper permits, licenses, agreements, and concurrences are filed or obtained by NASA Headquarters and the local, state, and Federal agencies, as applicable. These include such permits, licenses, and agreements as: Federal Aviation Administration (FAA) notice of construction, lighting and marking, and/or Restricted Area permit; Environmental Protection Agency (EPA) permits/licenses for emissions/releases; Nuclear Regulatory Commission (NRC)/state radioactive material permits; laser operating permits; installation compatible use zone studies, etc.
- d. **Activation/Operations:** The ORA team should review the following areas for activations/operations, as applicable. The ORA Lead shall ensure a record of reviewed activation/operations data is kept.
- (1) **Personnel Qualifications:** Verification the team proposed to perform the work has been trained and/or has the experience to complete the project.
  - (2) **Resource Staffing:** Is the test crew staffing commensurate with the test operations tempo; does the test campaign allow for adequate "work-rest" cycles?
  - (3) **Safety Critical Procedures:** Review of the procedures used to run the operations. This can be a sampling to verify the process for the correct integration between all disciplines and the customer are complete.
  - (4) **Critical System Operations:** Review of the planned abort process, deluge, purges and controls systems in the event of a failure.
  - (5) **Configuration Control:** Process verification for configuration control of hardware and software.
  - (6) **Redline/Blueline System:** Review of the blueline (initiation/startup parameters) and redline (shutdown/termination parameters) integration with controls and operations to verify system reliability.
  - (7) **Support Systems:** If applicable, the interaction of the support systems should be reviewed. Examples of support systems are Programmable Logic Controllers (PLC); Low Speed and High-Speed Data Acquisition Systems (LSDAS/HSDAS); communications; visual/and audio warning systems; and emergency response systems (deluge, infrared cameras, fire detection, gas detection, etc.).
- e. **Safety Systems/Data/Analyses:** The ORA team should review the following safety systems, data and analyses, as applicable. The ORA Lead shall ensure a record of reviewed safety data is kept.

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- (1) Hazard Analyses: The ORA team should review the hazard analyses and the disposition of identified risks. The ORA team shall verify risks have been accepted or mitigated to an acceptable level. Outstanding recommendations for mitigating significant risks are conveyed to senior management.
  - (2) Hazardous Operations Procedures: For hazardous operations, the ORA team will verify hazardous operation procedures exist and are followed. Hazardous operation procedures shall identify the appropriate engineering, administrative and personal protective equipment controls. Inclusive of hazardous operations is Process Safety Management (PSM) documentation and procedures, as applicable.
  - (3) Maximum Credible Event (MCE)/Quantity Distance (QD): For systems/operations in which the potential for explosions/rapid ignition exists, the ORA team shall review the MCE/QD analyses and verify proper controls and safe distances are met.
- f. Specified System Review: The ORA team should review the following typical systems, if applicable. This does not limit the ORA Lead from considering other systems.
- (1) Propellants/Oxidizers: (LH/GH, IPA, CH<sub>4</sub>, RP-1, JP-8, LOX/GOX, H<sub>2</sub>O<sub>2</sub>, etc.):
    - (a) Special emphasis on O<sub>2</sub> and other oxidizers, material compatibility (soft goods), flow rates, clean levels, abrupt pipe turns, etc.
    - (b) Special emphasis on leak and fire detection, alarms and warning controls.
  - (2) Pneumatics: Air, GN, GH, He, etc.
  - (3) Pyrophoric/Hypergolic/Pyrotechnics systems to include Triethyl Aluminum/Triethyl Boron (TEA/TEB).
  - (4) Miscellaneous Systems: Purges, hydraulics, FIREX/Deluge, Gas/Fire Detection, Industrial Water, Electrical, Control systems, Alarms and Warning systems and Data Acquisition.

## 6.2 Marine, Ground and/or Air Range Operations

Refer to SPR 8715.7, *Range Safety Program* for specific guidance, requirements, and procedures for range safety and operations. To enhance the likelihood of mission and program success for all range missions or operations and to minimize the risks to personnel or property, reviews of range operations should ensure hazards associated with the modifications, research, and nonstandard operations of experimental aircraft, marine craft and/or ground systems are identified, and risks are adequately managed. The ORA for range operations should verify the following have been accomplished:

- a. Preparations and planning for emergencies and adverse incidents.
- b. Completion of a range safety risk assessment or an off-nominal activity review for the range operations.

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- (1) Assess the risk to the personnel.
  - (2) Assess the debris field/trajectory in the event of a catastrophic loss.
  - (3) Assess the potential overpressure impacts and fragmentation distances for planned ordnance and munition operations and tests.
  - (4) Assess the potential overpressure impacts and fragmentation distances in the event of a catastrophic loss.
- c. An assessment of flight readiness for air operations in compliance with NPR 7900.3, *Aircraft Operations Management Manual*.
    - (1) Completion of an airworthiness review for flight systems and operations that are non-standard or off-nominal. The airworthiness review is accomplished by the owner of the flight system.
    - (2) Completion of a flight readiness/safety review with the range safety officer and range safety manager.
  - d. Review of the range personnel training and qualifications. This includes the Range Safety Officer, personnel responsible for range safety systems and analysis and marine/ground/air system operators.
  - e. Coordination with the maritime, aviation, and other regulatory agencies for the range operations.
  - f. An assessment of the potential impacts on SSC test operations and/or SSC tenant organizations operations from the proposed range operations.
  - g. An assessment of any potential impacts associated with operations on multiple, simultaneous SSC ranges. The assessment should address coordination and mitigating actions.
  - h. Review of the proposed range operations plans, procedures, checklists and deploy/launch/flight commit criteria.
  - i. If applicable, review of the Flight Termination System (FTS) criteria and capabilities for real time monitoring of the flight path/trajectory.
  - j. Review of any waivers or deviations to range safety requirements.
  - k. For an Unmanned Aircraft System (UAS), verification that a Certificate of Authorization or Waiver (COA) has been obtained from the FAA if the UAS will operate outside of an authorized Special Use Airspace.

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## CHAPTER 7. REPORTING REQUIREMENTS

### 7.1 Discrepancies and Recommendations

All discrepancies and recommendations shall be recorded on an SSC Form 649, *Review Item Discrepancy*. A control number shall be assigned to each discrepancy/recommendation for disposition. Recommendations shall be deliberated with all ORA team members before forwarding to the ORAB. The ORA team should review proposed recommendations with the appropriate operational personnel to assure the recommendations are understood and the ORA team has not acted on inaccurate or incomplete information. The ORA team should convey whether the response to a recommendation or discrepancy is tied to an activation (ATRR), test (TRR) or other applicable milestone.

### 7.2 Final Written Report

The ORA team shall maintain records of all proceedings and prepare a summary report. For ORIs, distribution includes the ORAB members and ORA team members. For ORTs and IIs, distribution includes the mini-ORAB and the applicable operating Directorate. The ORA Lead shall send the original material to the CEF and a copy to the project/program/facility file in DDMS.

The summary report will be prepared in two (2) parts as follows:

- a. Part I shall be an executive summary. It shall include:
  - (1) A brief summary of ORA team activities (number of meetings, presentations, etc.).
  - (2) Identification of the number of action items and status.
  - (3) A list of the significant residual risks, conclusions and recommendations.
  - (4) A signature page for the ORA team. Note: The signature of the ORI or ORT Lead signifies concurrence of the team. The ORA Lead should ensure dissenting opinions within the team are presented and resolved prior to endorsing the signature page.
- b. Part II shall include the supporting data, analyses and information. It shall include:
  - (1) A copy of the letter establishing the ORI/ORT/II.
  - (2) Minutes of meetings including at a minimum:
    - (a) attendees
    - (b) date
    - (c) agenda
    - (d) objectives/goals/intent
    - (e) actions

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- (f) decisions
- (g) dissenting opinions
- (3) Presentation charts.
- (4) Directly related correspondence.
- (5) Other information judged to be appropriate to support any future investigation or review.

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## APPENDIX A. Acronyms

ATTR	Activation Test Readiness Review
CEF	Central Engineering Files
CH <sub>4</sub>	Methane
DDMS	Design and Data Management System
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FCD	Facility Capabilities Document
FIREX	Fire Extinguishing System
FRD	Facility Requirements Document
FRI	Facility Risk Indicator
FRR	Facility Readiness Review
GH	Gaseous Hydrogen
GHe	Gaseous Helium
GOX	Gaseous Oxygen
He	Helium
HSDAS	High Speed Data Acquisition System
H <sub>2</sub> O <sub>2</sub>	Hydrogen Peroxide
ICD	Interface Control Document
II	Independent Investigation
IPA	Isopropyl Alcohol
JP-8	Jet Propellant Fuel
LH	Liquid Hydrogen
LOX	Liquid Oxygen
LSDAS	Low Speed Data Acquisition System
MCE	Maximum Credible Event
MRR	Mission Readiness Review
NASA	National Aeronautics and Space Administration
NESC	NASA Engineering and Safety Center
NPR	NASA Procedural Requirements
NRC	Nuclear Regulatory Commission
NSC	NASA Safety Center
ORA	Operational Readiness Assessment
ORAB	Operational Readiness Assessment Board
ORI	Operational Readiness Inspection
ORT	Operational Readiness Team
O <sub>2</sub>	Oxygen
PLC	Programmable Logic Controller

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POC	Point of Contact
PSM	Process Safety Management
QD	Quantity-Distance
RID	Review Item Discrepancy
RP-1	Rocket Propellant Fuel
SCB	Signal Conditioning Building
SCWI	SSC Common Work Instruction
SMA	Safety and Mission Assurance Directorate
SPD	SSC Policy Directive
SPR	SSC Procedural Requirements
SRD	Systems Requirement Document
SRTA	Short Range Training Ammunition
SSC	(John C.) Stennis Space Center
SSP	Stennis Safety Procedure
STD	(Technical) Standard
STE	Special Test Equipment
TEA/TEB	Triethyl Aluminum/Triethyl Boron
TRPT	Technical Review Process Team
TRR	Test Readiness Review



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## APPENDIX B. ORA Team Appointment Letter (Sample)

DATE

TO: Distribution

FROM: Appointing Official

SUBJECT: Appointment of an (Operational Readiness Inspection (ORI)/Operational Readiness Team (ORT)/Independent Investigation (II)) for the “XYZ” (Project/Facility/Range Operation).

In accordance with SPR 8715.2, the following personnel are assigned to the (ORI/ORT/II) for the operational readiness assessment of the “XYZ” (Project/Facility/Range Operation). Supervisors shall ensure their personnel assigned to the (II, ORT, or ORI) are afforded the time and resources necessary to complete and present their assessment, findings and recommendations to the Operational Readiness Assessment Board (ORAB) in support of the (test project or facility activation) timelines and the (Activation/Test Readiness Review or facility activation).

Operational Readiness Inspection (ORI)		
<i>Lead</i>	<i>Name</i>	<i>Org</i>
<i>Member 1</i>	<i>Name</i>	<i>Org</i>
<i>Member 2</i>	<i>Name</i>	<i>Org</i>
<i>Member 3</i>	<i>Name</i>	<i>Org</i>
<i>SMA Representative</i>	<i>Name</i>	<i>Org</i>
<i>Recorder</i>	<i>Name</i>	<i>Org</i>

Operational Readiness Team (ORT)		
<i>Lead</i>	<i>Name</i>	<i>Org</i>
<i>Member 1</i>	<i>Name</i>	<i>Org</i>
<i>Member 2</i>	<i>Name</i>	<i>Org</i>
<i>SMA Representative</i>	<i>Name</i>	<i>Org</i>
<i>Recorder (optional)</i>	<i>Name</i>	<i>Org</i>

Independent Investigation (II)		
<i>Independent Investigator</i>	<i>Name</i>	<i>Org</i>
<i>Recorder (optional)</i>	<i>Name</i>	<i>Org</i>

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## APPENDIX B. ORA Team Appointment Letter (Sample) (Continued)

This assessment will cover the overall operational readiness of the “XYZ” (Project/Facility/Range Operation) facility modifications, personnel, operations and processes to perform the “XYZ” (Project test/Facility activation /Range Operation).

The (ORI/ORT/II) will assess the overall readiness of the facility, personnel, operations and processes to perform (i.e. *engine testing/facility activation/range operations*) for the “XYZ” (Project/Facility/Range Operation). Specific objectives are:

- a. *List the specific areas of focus for the ORI/ORT/II for example:*
- b. *Assessment of the plans, procedures and controls to safely start, control and terminate “XYZ” operations*
- c. *Assessment of training and certifications to handle and use ABC materials and propellants in support of the “XYZ” project/facility/range operation*
- d. *Ensure the material compatibility and cleanliness for the “XYZ” project commodities*
- e. *Review the hazard analysis, maximum credible event and safe operating/viewing distances for “XYZ” operations*
- f. *Review regulatory approval and permits for the “XYZ” operations and testing*

The (ORI/ORT/II) shall present the results of their activities to the Operational Readiness Assessment Board (ORAB), comprised of the SSC Directors from the following Directorates: (*list mini-ORAB/ORAB members*). The ORI/ORT/II is granted authority to release the (*list the specific systems, operations and/or functions where the authority to commence into activation, functional testing, operations etc., are delegated to the ORI, ORT or II*) however, the (ORI/ORT/II) shall provide their findings and recommendations to the ORAB for the ORAB determination on whether to commence into (*List the specific activities or operations requiring ORAB decision, such as system testing the “XYZ” engine; full activation of the “XYZ” facility, or full range operations and test of the “XYZ” marine/ground/air system*).

The (ORI/ORT/II) will brief and provide their recommendations to the ORAB in support of the “XYZ” (Project/Facility/Range Operation) (*list the appropriate readiness review board; i.e. Activation Test Readiness Review/Test Readiness Review (ATRR/TRR), Facility Readiness Review (FRR), Mission Readiness Review (MRR)*) scheduled for (*date*).

Signature

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## APPENDIX C. Sample Release Letter for Systems/Operations Delegated to ORA Team

DATE

TO: Distribution

FROM: *(Lead for the Operational Readiness Inspection, Operational Readiness Team or Independent Investigation)*

SUBJECT: Release of the (systems, operations, etc.) for the “XYZ” Test Project, Facility or Range Operation & Test

The *(Operational Readiness Inspection, Operational Readiness Team or Independent Investigation)* for the “XYZ” Project assessed the liquid oxygen (LOX) system (*list the data/records/information assessed, i.e. design, material compatibility and cleanliness records, operating procedures, test team training and certifications, etc.*). The following Review Item Discrepancies (RIDs) were satisfactory addressed by the “XYZ” test/project team: *XYZ-12, XYZ-14 and XYZ-20*. No deficiencies were noted with the LOX system design, procedures, and documentation.

Based upon the above, the ORT releases the “XYZ” LOX system for (*list the functions/operations*) cold flows, functional testing and activation in support of data collection and operational performance assessments for the Test Readiness Review on the XYZ rocket engine.

Should you have any questions, please contact me at (228) 688-#### or via email at [really.m.important@nasa.gov](mailto:really.m.important@nasa.gov).

*Signature*  
Really M. Important  
XYZ (ORI, ORT, or II) Lead

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#### APPENDIX D. Sample ORAB Approval/Release Letter for Systems/Operations

DATE

TO: Director, AA00

FROM: Chairman, Operational Readiness Assessment Board (ORAB)

SUBJECT: "XYZ" Test Project/Facility/Range Operation and Test

The (*Operational Readiness Inspection (ORI)*, *Operational Readiness Team (ORT)*, or *Independent Investigation (II)*) for the "XYZ" Test Project/Facility/Range Operation and Test has concluded its operational readiness assessment in accordance with SPR 8715.2.

The ORI/ORT/II reviewed (*briefly list the areas/data reviewed*) and assessed (*briefly list the assessments*).

Currently there are *XX* open Review Item Discrepancies (RIDs) affecting "XYZ" Test Project/Facility/Range Operation and Test. The RIDs are as follows XYZ-RID: *001, 002, 003, 004, 005, 006, and 007*. Upon closure of all open RIDs to the satisfaction of the ORI/ORT/II and the ORAB, the "XYZ" ORI/ORT/II recommends the "XYZ" be authorized to begin (*testing, facility activation and operations, or range operations and testing*).

Respectfully,

*Signature*

Really M. Important

XYZ (ORI, ORT, or II) Lead

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**APPENDIX D. Sample ORAB Approval/Release Letter for Systems/Operations – Continued**

The Operational Readiness Assessment Board (ORAB) has reviewed the findings and recommendations of the (*Operational Readiness Inspection (ORI)*, *Operational Readiness Team (ORT)*, or *Independent Investigation (II)*) for the “XYZ” Test Project/Facility/Range Operation and Test. The ORAB concurs with the recommendations of the ORI/ORT/II and recommends the “XYZ” be authorized to begin (*testing, facility activation and operations, or range operations and testing*).

Approved:

*Signature*

\_\_\_\_\_  
Name  
Chairman, “XYZ” ORAB

\_\_\_\_\_  
Date

NOTE: If the authority to commence into test, facility activation or range operations & test is delegated to the ORA Lead, then the ORA Lead would grant authority to commence operations.

Again, the Operational Readiness Assessment is an independent assessment of the readiness of the personnel, processes/procedures, facilities and/or equipment to safely execute SSC’s mission in support of testing, range operations or facility activation. The ORA approval/authority to proceed in conjunction with the technical review (test readiness review, facility readiness review, flight readiness review or mission readiness review) is necessary for an activity to commence.

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**APPENDIX E. Release of the ORA Team (Sample)**

DATE

TO: Distribution

FROM: Appointing Official

SUBJECT: Release of the (*Operational Readiness Inspection (ORI)/Operational Readiness Team (ORT)/Independent Investigation (II)*) for the “XYZ” (*Project/Facility/Range Operation*).

The Operational Readiness Assessment Board (ORAB) has reviewed the findings and recommendations of the (*Operational Readiness Inspection (ORI), Operational Readiness Team (ORT), or Independent Investigation (II)*) for the “XYZ” Test Project/Facility/Range Operation and Test in support of SSC’s mission. Once the final operational readiness assessment report is completed and file in accordance with SPR 8715.2, the members of the (*ORI/ORT/II*) are released from the assessment team and may return to their normal duties.


The ORAB sincerely appreciates the (*ORI/ORT/II*) attention to detail and diligence in assuring the readiness of our personnel, processes/procedures, facilities and/or equipment to execute SSC’s mission. Your efforts ensure the safety and preservation of SSC personnel, facilities, mission and the environment.

Signature

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## APPENDIX F. Review Item Discrepancy (RID) Form

 National Aeronautics and Space Administration John C. Stennis Space Center Stennis Space Center, MS 38529-0000		<b>REVIEW ITEM DISCREPANCY (RID)</b>	
RID NUMBER			
OPERATIONAL READINESS ASSESSMENT (ORA) OF:		SYSTEM:	
DISCREPANCY:			
TIME OR EVENT DEADLINE		<input type="checkbox"/> MANDATORY <input type="checkbox"/> NONMANDATORY	
JUSTIFICATION:			
RECOMMENDED BY		DATE	
ORA CHAIRPERSON			
ACTION TAKEN BY OPERATOR TO MITIGATE DISCREPANCY:			
<input type="checkbox"/> IMPLEMENTATION COMPLETE		DATE	

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## **APPENDIX G. Operational Readiness Assessment Team Resources**

Personnel for Operational Readiness Assessment teams may be drawn from:

Engineering & Test Directorate for operations, test and projects

Center Operations Directorate

Safety and Mission Assurance Directorate

Other SSC Directorates or Offices

Appropriate laboratory, operating or staff elements

Independent NASA center consultants (e.g. a Marshall Space Flight Center propulsion engineer, a hydrogen peroxide expert)

Department of the Defense agencies